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ABSTRACT

Competency based education changes the teacher's role from that of a deliverer of information to that of a manager of learning. In order for the teacher to be able to fulfill this function, it is essential that support mechanisms be established and maintained. Whatever support mechanisms are to be created should evolve from the objectives learners will be asked to accomplish. One simple hierarchy to use for this task includes knowledge level objectives, performance level objectives, consequence level objectives, and affective objectives. Since knowledge level objectives are normally the foundation on which the others are built, the creation of a resource center will play an important part in the development of all four levels of the hierarchy. The purpose of the center should be to provide a gathering point for students, to provide all materials necessary to achieve specified objectives, and to have help available when necessary. Learning packets or modules should be stored and distributed, and pre- and postassessments administered when appropriate. Materials such as filmstrips, videotapes, and simulations should be provided to support module objectives, and the center should have study tables, small group rooms, and learning carrels. (The major portion of this report describes the resource center in detail, including personnel, physical facilities, reference systems, furnishings, and equipment considerations.) (MK)

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SUPPORT FACILITIES AND REQUIREMENTS

FOR

COMPETENCY-BASED PROGRAMS

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1974

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SUPPORT FACILITIES AND REQUIREMENTS
FOR
COMPETENCY-BASED PROGRAMS

Systematically developing an individualized, competency-based program is an extremely complex venture which requires a great number of support mechanisms not normally included in traditional programs. Most often when the term competency-based instruction is use, the reader will think of modules and behavioral objectives; however, the most important consideration in program operation is the framework in which these tools are utilized. This new type of program dramatically changes the role of the teacher from that of deliverer of information to that of counselor, advisor, observer, facilitator, evaluator, and manager. In order for the teacher to be able to fulfill these functions while using competency-based materials, it is essential that adequate support mechanisms be established and maintained.

Whatever support mechanisms are to be created should evolve from the kinds of objectives which learners will be asked to accomplish. One relatively simple hierarchy to use for this task is as follows:

1. Knowledge level objectives: these are the sorts of objectives which are normally evaluated by paper and pencil tests.
2. Performance level objectives: these are objectives for which some sort of process evaluation is used. For example, in teacher education one might examine the teaching process by using Flander's interaction analysis technique to evaluate the quality of verbal interaction between teacher and pupil.
3. Consequence level objectives: these objectives call for the evaluation of the product produced by a student. For example, in teacher training a student teacher could be evaluated on the basis of the objectives which the pupils taught actually were able to accomplish. Accountability procedures focus on consequence level objectives.
4. Affective objectives: these objectives focus on the development of attitudes and values and are most often (but not always) evaluated informally in the natural surroundings where one might expect the appropriate behavioral criteria to be observed.

To support the process by which students accomplish knowledge level objectives, a resource center might be created which would house all of the materials, media and equipment necessary for the student to get on with the task. It is also possible that this resource center could support some performance level objectives; however, in many instances this will have to be done in another setting. For instance, in teacher education some performance skills

might be demonstrated using simulations; however, most performance skills would more likely be demonstrated in the public school classroom where the student teacher was assigned. Similarly, consequence level objectives might be demonstrated in the resource center, but most likely would be shown in the field. For example, if the student were asked to bake a chocolate cake that must meet certain flavor and lightness criteria, it could be accomplished wherever there were adequate kitchen facilities. However, if a student teacher were to demonstrate that the children he or she had taught had accomplished certain objectives, that consequence would more likely occur outside of the resource center in a "real world" setting. In like manner, affective objectives will most likely be informally evaluated in a "real life" setting which is appropriate.

Naturally the resource center plays a large part in the development of all four levels of the hierarchy, since knowledge is normally the foundation upon which the others are built, but in many instances it will not do the whole job, because of the likelihood that higher level objectives may have to be demonstrated in other settings.

An Individualized Study Center

In order to facilitate the change in the roles of the teacher from that of deliverer of information to the manager of learning, it is necessary to develop a resource center which provides the student with the various print and non-print media and equipment to be used in achieving learning objectives. Such a resource center or Individualized Study Center (ISC) will differ from a traditional media center or resource center in that its sole purpose is the support of an individualized, competency-based program. There should be no general reference function, a representative collection of materials is not necessary, and a check-out system should not be necessary. The purpose is to provide a gathering point for students, to provide all materials necessary to achieve specified objectives, and to have help available when necessary.

An individualized study center should act as an operations center where faculty schedules are kept so that small group or individual conferences can be arranged. Learning packets or modules are stored and distributed there and module pre- and post-assessments administered when appropriate. All of the necessary software to support module objectives will be available in the center, such as printed material, filmstrips, films, tapes, video-tapes, slides, and simulations. The center will also need to have study tables, small group rooms, and learning carrels equipped with various items of media hardware. Students should be able to use the room on an individualized or small group basis, taking as much or as little time as necessary to complete various modules; therefore, a full-time staff will be necessary to keep the center open and operating.

Personnel

If an Individualized Study Center is to fulfill its function as a focus point for an individualized, competency-based program, it is crucial that a sufficient staff of trained personnel be provided to operate the center. There are three categories of duties which need to be performed: over-all supervision, clerical, and maintenance. The entire center should be under the direction of the highest administrative officer in charge of instruction for the unit within which the center operates.

The supervisor of the Individualized Study Center will have a very real effect on the entire instructional program. It is highly desirable that the person have experience as a teacher and also have media/library credentials. Specifically, it is important that the supervisor establish rapport with the students and faculty, assist students in the learning process who are experiencing difficulties with the content of the instructional sequences, maintain a record of student progress, assist students with the various media devices used in conjunction with instructional materials, organize and maintain a collection of instructional materials to be used in an individualized teacher education program, keep a schedule of professors' conference times and help students to arrange small group meetings with professors, keep faculty informed of materials which are available to support an individualized teacher education program and obtain those materials for preview when possible, supervise any support staff, and assist in other duties as assigned.

In addition to a supervisor, the center should have the services of a clerical position. This position would be responsible for typing catalog cards, filing module materials such as pre- and post-assessments, duplication of modules, distribution and/or sales of modules, maintenance of a module inventory and collection and recording of module evaluation data. Because the philosophy of an individualized, competency-based program holds that students should be able to proceed at their own pace in most instances, it will be necessary to operate the center on more than a 40-hour week. As most budgets are usually limited, consideration should be given to staggering the hours of the supervisor and the clerical staff to cover some evening or weekend hours.

Easy and immediate access for students are key aspects of an individualized study center, as well as a well planned program and excellent instructional materials; however, they will be of limited value if materials are not in a usable and available state and equipment operational at all times. Experience has shown that students become very frustrated at an early stage if access to needed materials or equipment is not easy.

An equipment maintenance and repair technician with some production knowledge is the third important member of the team. The

technician need not be assigned maintenance as his sole function, but should be readily available when needed. If a film breaks or a video-tape recorder will not function, the problem should be corrected within the hour if at all possible, and not in a matter of days or weeks.

Physical Facilities

Much of the student teacher contact in an individualized, competency-based program is on a small group or individual basis. Students need to feel that there is a location that they can identify with, where they can interact with other students in the same program and where help and advice are readily available. An Individualized Study Center can act as such a focal point. The center should be located within the department or school where it will be close to faculty offices. Using a combination of other campus resources, such as the reserve section of the library and the campus audio-visual center, or using a central campus resource center has not proven itself to be as successful.

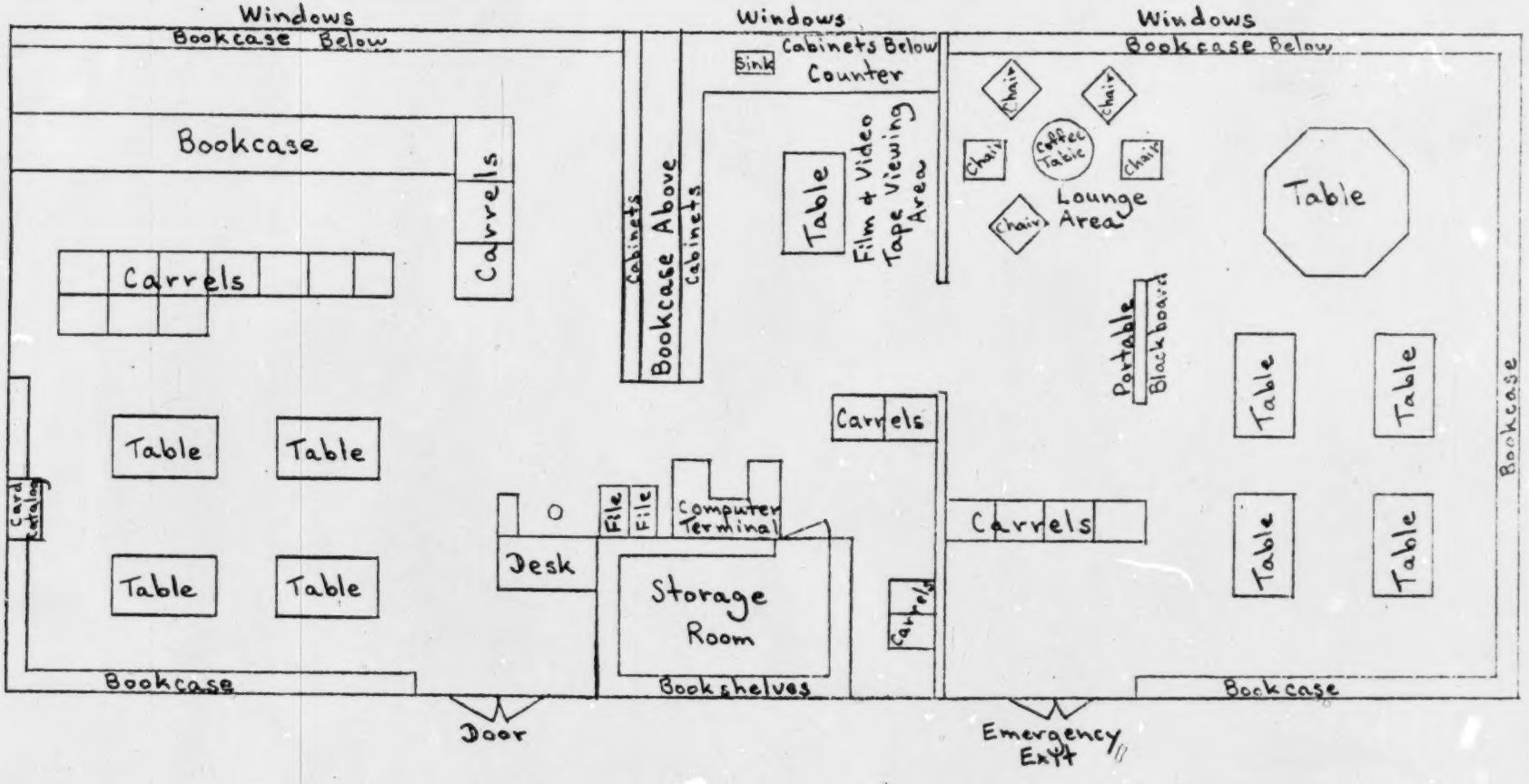
The room in which the Individualized Study Center is to be housed should have several features:

1. It should be a pleasant place in which to work with bright colors and a warm atmosphere.
2. There should be a quiet area with study tables; an area where small groups can view films or video tapes; and a series of learning carrels for individual viewing, listening and studying; and an area for the storage and distribution of modules and module pre- and post-assessments.
3. There will be a great deal of audio-visual equipment used in the room, therefore, a number of electrical outlets and adequate electrical current supply should be provided.

The floor plan on the following page shows the Individualized Study Center at San Diego State University. A new facility in most cases is not necessary. This center represents a conversion of what was two large classrooms. These rooms include a total of 2,250 square feet of floor space. The center is open from 8:00 a.m. to 9:30 p.m. daily. At the present time just under the equivalent of 100 full-time students are engaged in competency-based education programs. These conditions represent a maximum load for the center and at times students cannot find a seat. In considering the size of the Individualized Study Center in relation to the number of students it must accommodate, it is necessary to remember that a number of the competencies which students are expected to master in the San Diego program are field based and a great deal of student time is spent in local public schools.

SAN DIEGO STATE UNIVERSITY

SCHOOL OF EDUCATION



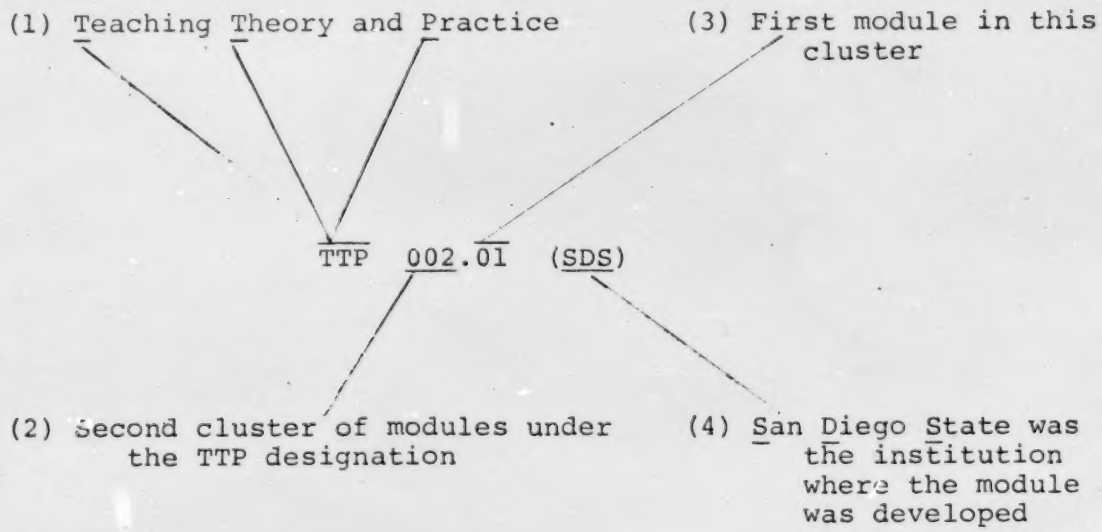
INDIVIDUALIZED STUDY CENTER

The Reference System

As new competency-based modules are developed and supporting print and non-print resources grow, it will be increasingly necessary to adopt some sort of numbering or cataloging system. Since the Individualized Study Center should be created specifically to support the competency-based program, one of the easiest systems is to key materials to the number of the module which they support. One module numbering system which has worked effectively is that developed at Syracuse University.* Briefly, this system has four designators as follows:

1. A three-letter designation representing the subject area.
2. A three-number designation (followed by a decimal point) for a particular component or cluster of modules.
3. A two-number designation for the particular module in that cluster.
4. A three-letter designation (within parentheses) for the institution at which the module was developed.

An example of this numbering system is as follows:


(1) Teaching Theory and Practice
(3) First module in this cluster
TTP 002.01 (SDS)
(2) Second cluster of modules under the TTP designation
(4) San Diego State was the institution where the module was developed

*Handbook for the Development of Instructional Modules In Competency-Based Teacher Education Programs, by R. L. Arends, J.A. Masla, and W.A. Weber, The Center for the Study of Teaching, 117 Bacon Hall, 1300 Elmwood Ave., Buffalo, N.Y., 14222.

This numbering system is logical for a competency-based program and has plenty of room for expansion as the program grows. Naturally, the addition of a subject and author index to this basic system will be highly desirable for some users.

Equipment Considerations

The equipment needed to support competency-based learning modules need not be elaborate or extremely expensive. Often times equipment which is already on hand can be used or adapted. For example, learning carrels with built-in tape decks and rear view screens may be purchased, however, many times a slide projector and a cassette recorder will work just as well. This arrangement has the added advantage of being used in a carrel for individual use or on a table top for small groups.

Most institutions have a maintenance unit which has the capability of building learning carrels at a much lower price than would otherwise be available. Each carrel should have two electrical outlets, a place for students to store books, adequate room for note taking, and room for either a filmstrip viewer cassette recorder combination or a slide projector and cassette recorder.

It is important that each piece of equipment have an earphone jack and be equipped with earphones so that the noise level in the center is kept at a minimum. Several listening posts with six to eight earphones each will also be very useful for small groups. Many times, especially for films or video tapes, it will be desirable to have a sign-up sheet and wait for a group of four to six before viewing the program.

As the materials in the center are used it will become necessary to make repairs such as splicing audio-tapes, adding new leaders to filmstrips and remounting slides. The equipment to make these repairs is inexpensive and easy to use. Given the choice between the formats of 16mm film and video cassettes for use in individualized instruction, the video cassette has several advantages. There is no threading problem, rewinding is less complicated, and machine noise is much less.

Experience has shown that it is a good policy to make duplicates of all materials immediately and to store the original and use the duplicate. Many materials in an individualized program receive such heavy usage that they must be repaired or replaced after a year's usage. High speed duplicating equipment for print and audio materials will enable students to obtain copies of materials for reference or intensive study and will also reduce the loss of materials from the center.

In selecting equipment primary consideration should include ease of operation, flexibility, maintenance requirements and cost.

Cassette tape recorders, filmstrip sound viewers, slide carousels, and video cassette recorders fulfill these considerations much better than more expensive and elaborate installations such as dial access information retrieval systems.

Basic Requirements for Start-Up

After having secured a room for the Individualized Study Center, it should be inspected to determine what sort of remodeling may be necessary in order to gain optimal usage of the space. Items to be considered in remodeling could include the following:

1. Rewiring and adding new electrical outlets.
2. Repainting.
3. Carpeting or other sound deadening material.
4. Construction of storage facilities such as cabinets with locks, open shelving for books and materials, and a storage room for modules and pre- and post-assessments.
5. Room lighting, or the ability to adequately darken some areas.
6. Providing security for doors and windows.

Furnishings

The center should be furnished in such a manner to facilitate students working alone as well as to provide a setting which allows for small group interaction. As a result both large and small tables with chairs and individual study carrels are desirable. The following is a recommended list of furniture to fill these requirements:

1. Six or Eight 3 x 5 foot tables seating four students.
2. Fifteen study carrels wired with two electrical outlets.
3. Four or five 20 x 36 inch tables.
4. About fifty chairs.
5. Three file cabinets.
6. Two desks for supervisory staff.
7. Card catalog.
8. Lounge chairs and tables if there is room for an informal reading/interaction area.

Institutions will often have most of this furniture in stock and it will not be necessary to purchase the items, with the possible exception of study carrels. Commercially available carrels are usually rather expensive, however, some institutions will have a carpentry shop which will be able to produce or renovate carrels which will be quite satisfactory.

Software

Most learning modules list several learning alternatives for each objective. It is desirable to vary the format of the alternatives

so that print and non-print materials are available in order to provide variety and reinforcement and to meet the varying needs of individual learners.

Whenever possible commercially available materials should be purchased and adopted for module usage. However, there will be occasions when there are no suitable materials available, therefore, a budget for locally produced materials should be planned for.

Media such as filmstrips, slides, films and video-tapes should be selected in standard formats. Some media software can only be used on specialized pieces of equipment usually manufactured by the same firm that produces the software. Because of the additional cost, repair and maintenance problems, higher initial costs due to low volume purchasing and lack of flexibility such software items should be avoided whenever possible.

Several storage cabinets for software should be considered such as the following:

1. Cabinets for multi-media kits, simulations and manipulative items.
2. Several cabinets with trays which will hold filmstrips and associated cassette tapes, as well as cassette tapes by themselves.
3. A cabinet for video cassettes and 16mm films.
4. A small card catalog.

Equipment

The following list of equipment should provide the necessary flexibility for an initial implementation:

1 - 16mm projector
1 - 3/4" video cassette recorder
1 - 3/4" video cassette playback only
2 - television monitors
2 - carousel slide projectors
1 - filmstrip projector
1 - record player
6 - cassette tape recorders
6 - sound filmstrip viewers
2 - super 8 filmstrip loop viewers
12 - headphones
2 - listening posts with 6 headphones
2 - portable rear view screens
1 - cassette tape recorder with a synchronization pulse

The foregoing sections have provided recommendations on remodeling, furniture, software, and equipment. Naturally the needs

of each institution will vary in each of these categories, however, the experience at San Diego State University indicates that a total budget of approximately $10,000 should meet the initial start-up needs across all of these categories.

Administrative Support

In order for an effort of this kind to be successful it is absolutely imperative that the institution be committed and lend substantial administrative support. The Dean and Department chairment must be willing to provide positions, find and allocate adequate physical as well as monetary resources, and establish a system of incentives and rewards for faculty.

Additionally, it should again be mentioned that the creation of a campus based Individualized Study Center may not provide all of the support needed for many competency-based programs. In some instances it will be very desirable to create special purpose facilities where performance and consequence level competencies may be mastered by students. For example, in teacher education it may be necessary to create a micro-teaching laboratory at the school site in order to meet the requirements of some types of competency-based programs. If this is to be accomplished it then becomes imperative that school district administrators be committed and join in as working and contributing members of the team.

Often new competency-based programs face many extremely frustrating problems when they first begin due to the fact that adequate supporting resources and facilities have not been established. This paper has outlined the approach to solving this problem used at San Diego State University. The lessons learned in this case were mostly achieved through the "school of hard knocks" and it is hoped that this paper will assist others to avoid at least some of the errors in supporting competency-based programs.